

**Two New Species of Chromodorididae (Mollusca: Nudibranchia)
from the Tropical Indo-Pacific, with a Redescription of
Hypselodoris dollfusi (Pruvot-Fol, 1933)**

by

Terrence M. Gosliner

and

David W. Behrens

Department of Invertebrate Zoology and Geology, *Woods Hole of Sciences*,
Golden Gate Park, San Francisco, California 94118

Two new species of the family Chromodorididae are described. *Chromodoris buchanaanae* is known from northern New South Wales, Australia. It is similar in appearance to several members of the *Chromodoris quadricolor* complex, but differs in its color pattern with a creamy white body with brown flecks, white longitudinal lines and an orange marginal band. *Hypselodoris dollfusi* (Pruvot-Fol, 1933) was originally described from the Gulf of Suez and is here documented for the first time since its original description. It is also known from the United Arab Emirates. It is readily distinguished from other members of the genus by its opaque white body with pink-purple rings and yellow-orange marginal band. It is similar in its anatomy to several species of the monophyletic clade containing *H. fucata*, *H. kaname*, *H. koumacensis* and *H. paulinae*. The color pattern, distribution of mantle glands and radular tooth morphology clearly separate *H. dollfusi* from other members of this clade. *Hypselodoris babai* is known from Okinawa. It can be distinguished by its red-brown body color with opaque white markings. It is similar in appearance to *H. bullocki* in having an elevated gill sheath, but differs in its coloration and by the presence of mantle glands.

At the end of the twentieth century, numerous papers described new species of Chromodorididae from the tropical Indo-Pacific (Rudman 1984, 1986, 1987, 1995; Baba 1995, 1996; Hamatani 1995; Gosliner and Behrens 1998; Johnson and Gosliner 1998; Gosliner and Johnson 1999; Schrödl 1999; Valdés et al. 1999). These papers added much to our knowledge of biodiversity of the region and also clarified higher systematic relationships within the family. Most of these papers have focused on species that have been found along the margins of the Pacific and Australasian plates and have added many new taxa from Japan, Philippines, Papua New Guinea, and Australia. Recently, we were provided with additional material of two undescribed, large chromodorids from Australia and Okinawa. This paper describes the anatomy and systematic relationships of these additional taxa and provides a redescription of *Hypselodoris dollfusi* from the United Arab Emirates.

SPECIES DESCRIPTIONS

Family Chromodorididae Bergh, 1891

Genus *Chromodoris* Alder and Hancock, 1855*Chromodoris buchananae* sp. nov.

Figs. 1A, 2A-D, 3A-D

TYPE MATERIAL. — HOLOTYPE: Australian Museum C. 383578, specimen dissected, South Solitary Island, Coffs Harbour, New South Wales, Australia, 15 m depth, February 1997, Carol Buchanan.

ETYMOLOGY. — *Chromodoris buchananae* is named for friend and colleague Carol Buchanan who first discovered this species, and provided us with the holotype.

DISTRIBUTION. — Thus far, this species is known only from the type locality, South Solitary Island, Coffs Harbour, New South Wales, Australia.

EXTERNAL MORPHOLOGY. — The living animal (Fig. 1A) was approximately 48 mm in length. The body is a translucent cream color with small brown flecks dispersed over the notum. Around the margin of the notum there is a wide orange band. Within this band is a thin opaque white band. There are two opaque white lines running from just posterior of the rhinophores to the side of the gills pocket. There is also a short white line anterior to each rhinophore, and a line forming a posterior to the gills. The hyponotum and posterior end of the foot are cream colored with a broad orange marginal band, similar to that on the notum. The posterior end of the foot has a white line forming a "V", and there are several white lines of varying length along the side of the hyponotum. The rhinophores and gill are orange. There are 7 unipinnate branchial leaves forming the branchial plume. The perfoliate rhinophores bear about 20 lamellae.

MANTLE GLANDS. — The subcutaneous mantle glands (Fig. 2A) form a discontinuous submarginal band around the notum of the animal. They are absent from the anterior portion of the animal to just behind the rhinophores. These glands consist of highly ramified, spherical lobes that are clustered together, resembling bunches of grapes (Fig. 2B).

BUCCAL ARMATURE. — The muscular portion of the buccal mass is approximately equal in length to the oral tube. At the anterior end of the muscular portion of the buccal mass is a chitinous labial cutical, which bears numerous jaw rodlets. These rodlets (Fig. 3A) are elongate with spreading, bifid apices. The radular formula is $81 \times 63.0.63$. There is no trace of a row of rachidian teeth. The innermost lateral teeth (Fig. 3B) are broad and quadrangular. There are three to four elongate denticles on the inner side of the elongate, triangular primary cusp and four to five denticles on the outer side of the cusp. The next successive inner lateral teeth lack denticles on the inner side of the cusp, but have three to four denticles on the outer side. The middle lateral teeth (Fig. 3C) are elongate with 7–9 denticles on the outer side of the broader cusp. The outermost teeth (Fig. 3D) are unevenly curved with an abbreviated portion containing 3–7 short, rounded denticles below the small primary cusp.

REPRODUCTIVE SYSTEM. — (Fig. 2C) The ampulla is thick and tubular, narrowing somewhat before bifurcating into an oviduct and vas deferens. The short oviduct enters the female gland mass near the albumen gland. The prostatic proximal portion of the vas deferens is folded over itself once before it narrows markedly into the relatively short, muscular, ejaculatory portion. The ejaculatory portion

→

FIGURE 1. Living animals. A. *Chromodoris buchananae* sp. nov., specimen from South Solitary Island, Coffs Harbour, New South Wales, Australia, photograph by C. Buchanan. B. *Hypselodoris dollfusi* (Pruvot-Fol, 1933), specimen from Khor Fakken, United Arab Emirates, photograph by C. Harris and L. Betts. C. *Hypselodoris babai* sp. nov., specimen from Seragaki, Okinawa, photograph by R. Bolland.



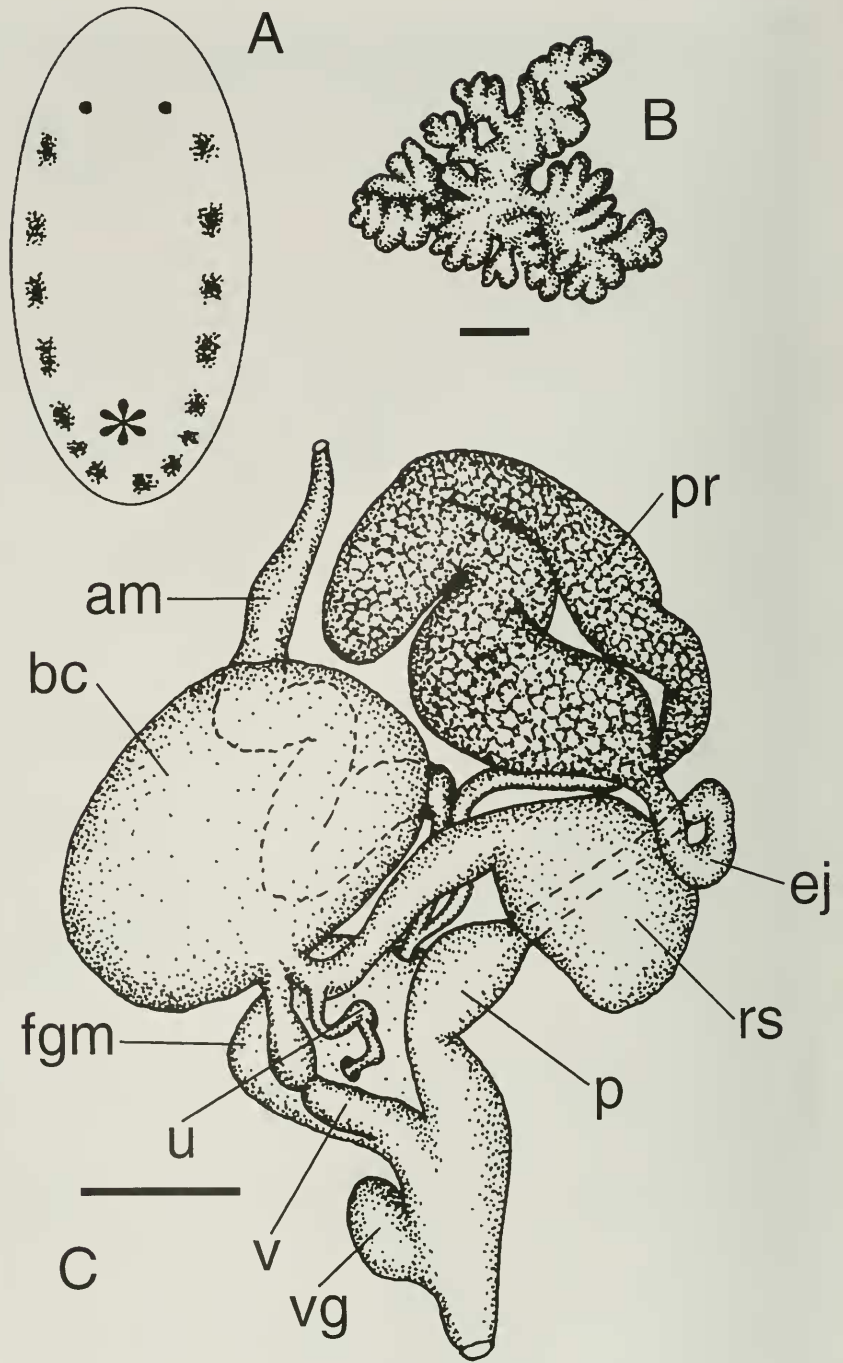


FIGURE 2. *Chromodoris buchananae* sp. nov. A. Subcutaneous glandular network. B. Mantle glands, enlarged, scale = 1.0 mm. C. Reproductive system, am = ampulla, bc = bursa copulatrix, ej = ejaculatory duct, fgm = female gland mass, p = penis, pr = prostate, rs = receptaculum seminis, vg = vestibular gland, scale = 1.0 mm.

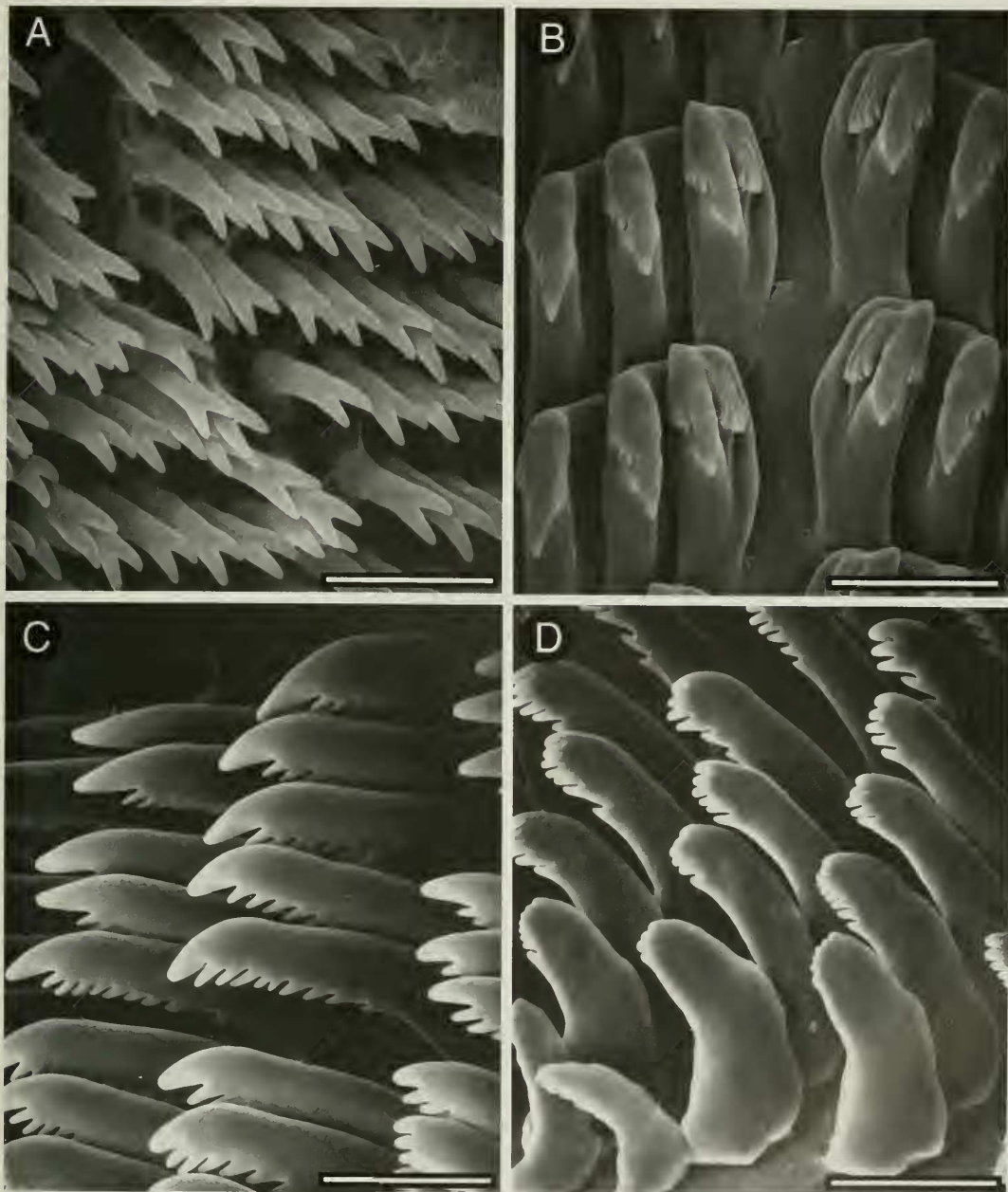


FIGURE 3. *Chromodoris buchanae* sp. nov. Scanning electron micrographs. A. Jaw rodlets, scale = 8.6 μm . B. Inner lateral teeth, scale = 27 μm . C. Lateral teeth from central portion of half-row, scale = 23.1 μm . D. Outer lateral teeth, scale = 25 μm .

narrows abruptly to a curved segment and then enters the short penial bulb, which is adjacent to the slender vaginal duct at the common gonopore. The distal end of the vas deferens is devoid of any penial hooks. The female gland mass consists of the large mucous gland and small membrane and albumen glands. Near the exit of the mucous gland there is a small, ovoid vestibular gland. A relatively short vagina leads to a spherical bursa copulatrix. Adjacent to the vagina, a short duct emerges and

connects to the pyriform receptaculum seminis. The uterine duct emerges a quarter of the length along the duct to the receptaculum seminis. The uterine duct is relatively short and enters the female gland mass near the albumen gland.

DISCUSSION. — The color pattern of this species is reminiscent of some members of the *Chromodoris quadricolor* complex (Rudman 1982; Gosliner and Behrens 1998). Members of this group have longitudinal lines, an orange marginal or submarginal band and orange gills and rhinophores. Of the numerous species in this complex, only *C. africana* Eliot, 1904 and *C. magnifica* (Quoy and Gaimard, 1832) have white lines on the body. The remaining species all have black lines or other markings. Both *C. magnifica* and *C. africana* differ from *C. buchananae* in having a black rather than a cream body color. The only other chromodorids with a body color similar to *C. buchananae* are *C. decora* (Pease, 1860) and *C. lekker* Gosliner, 1994. Both of these species have a creamy white body with an orange marginal band and opaque white markings on the notum. In *C. decora* there is a central white line that bifurcates anterior to the gills. In *C. lekker* there are scattered opaque white spots. Both species differ from *C. buchananae* in having opaque white spots and dark plum to black spots submarginally. They also have white gills and rhinophores whereas *C. buchananae* has orange gills and rhinophores and has small brown spots on the notum that are absent in the other two species.

The mantle glands of *Chromodoris buchananae* are highly ramified as have been described for members of the *C. quadricolor* complex (Gosliner and Behrens 1998). The radular teeth of *C. buchananae* are similar in configuration to many of the members of this complex, as well. The radular arrangement differs from that of *C. decora* and *C. lekker* in that these species have a well-developed rachidian row of teeth while in *C. buchananae* there is no trace of a rachidian row. The reproductive system of *C. buchananae* does not differ markedly from that of other members of *Chromodoris quadricolor* complex. Members of this group of species have a relatively short ejaculatory portion of the vas deferens and a simple ovoid vestibular gland.

Genus *Hypselodoris* Stimpson, 1855

Hypselodoris dollfusi (Pruvot-Fol, 1933)

Figs. 1B, 4A–B, 5A–D

Glossodoris dollfusi Pruvot-Fol, 1933:126, pl. 1, figs. 7–8; pl. 3, fig. 40.

Hypselodoris dollfusi (Pruvot-Fol, 1933) comb. nov.

MATERIAL EXAMINED. — **HOLOTYPE:** Muséum National d'Histoire Naturelle, Paris, St. XXV, Dollfus Expedition, 12 January 1919, leg. R. Ph. Dollfus. CASIZ 127918, one specimen, 21 m depth, Anemone Gardens, Khor Fakken, Dubai, United Arab Emirates, Gulf of Oman, 24 December 1999, Carole Harris. CASIZ 127919, one specimen, dissected, 20 m depth, Coral Gardens, Khor Fakken, Dubai, United Arab Emirates, Gulf of Oman, 16 July 1999, Carole Harris and Leon Betts.

OTHER MATERIAL. — Photographs of additional material from Dubai were examined to determine variability in external morphology and coloration.

DISTRIBUTION. — Thus far, this species is known only from the type locality, the Gulf of Suez, and Khor Fakken, United Arab Emirates.

EXTERNAL MORPHOLOGY. — The living animals (Fig. 1B) reach 45–50 mm in length. The body is opaque white overall, with a bright yellow-orange marginal band. The notum has a series of deep pink-purple rings of varying diameters, which surround a circle of lavender. In some specimens the circle within these rings have a bluish tinge. A similarly colored ring is found around the branchial plume pit and at the base of the rhinophores. The pink rings are situated along the notal margin, with one at both the anterior and posterior ends and midlaterally between the rhinophores and gill. The rings vary in number from 9 to 21. The hyponotum bears 4–6 pink rings and there is one at the tip of the

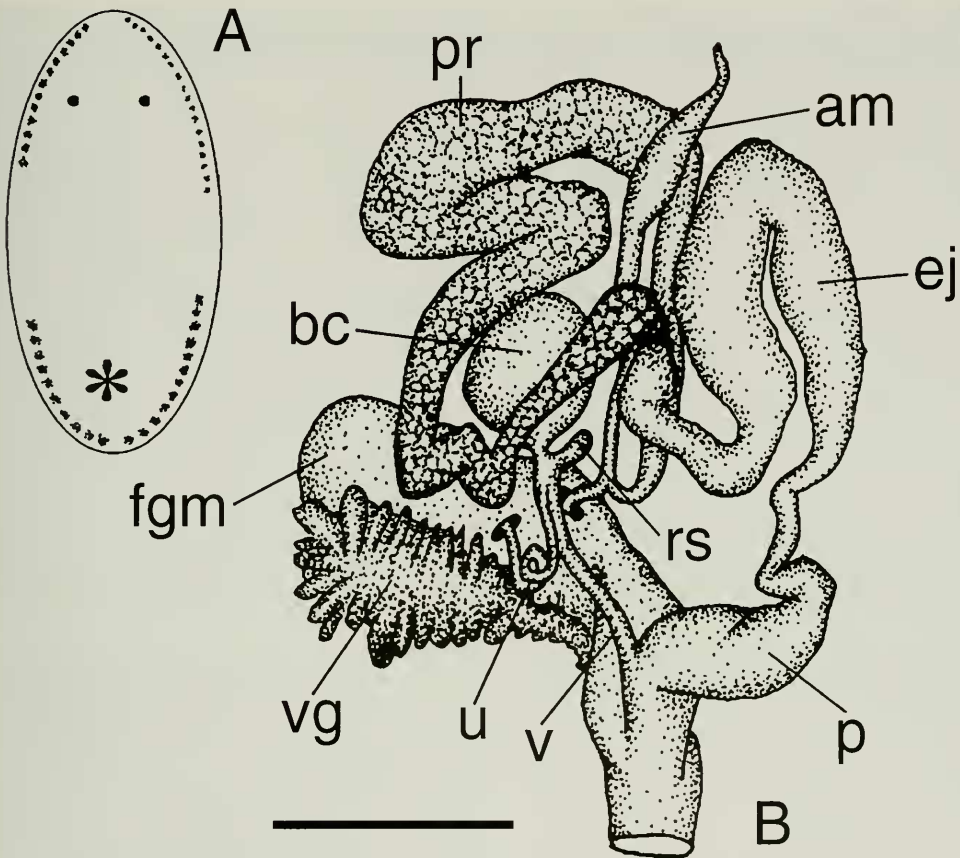


FIGURE 4. *Hypselodoris dollfusi* (Pruvot-Fol, 1933) A. Subcutaneous glandular network. B. Reproductive system, am = ampulla, bc = bursa copulatrix, ej = ejaculatory duct, fgm = female gland mass, p = penis, pr = prostate, rs = receptaculum seminis, vg = vestibular gland, scale = 1.0 mm.

posterior end of the foot. The rhinophores and gill are red. The rhinophores are perfoliate with 27 lamellae. The branchial plume is partially spreading, with 10 unipinnate gill leaflets.

MANTLE GLANDS. — (Fig. 4A) There are about 22 large posterior glands. A lateral series of glands is absent. There are 12–18 anterolateral glands on either side of the head. In the paratype, the 18 glands on the right side of the head were smaller (some indicating recent regeneration) than the 13 glands on the left side.

BUCCAL ARMATURE. — The muscular portion of the buccal mass is approximately equal in length to the oral tube. At the anterior end of the muscular portion of the buccal mass there is a chitinous labial cuticle, which bears numerous jaw rodlets. The rodlets (Fig. 5A) have a short base and a curved apex without lateral rodlets. The radular formula is $66 \times 88.0.88$. There is no trace of a rachidian row of teeth. The inner lateral teeth (Fig. 5B) have a short wide base with a bifid cusp. On the right side of the radula, inner and outer denticles are absent, while on the left side a single short inner denticle is present. The remainder of the inner and middle lateral teeth (Fig. 5C) are broad with a bifid cusp and no lateral denticles on either the inner or outer margins of the teeth. The outer 4–10 teeth (Fig. 5D) also have a bifid cusp and 4–6 denticles on the outer side.

REPRODUCTIVE SYSTEM. — (Fig. 4B) The arrangement of the organs is triaulic. The ampulla is elongate and curved. It divides into the short, thick, slightly convoluted prostate and short oviduct,

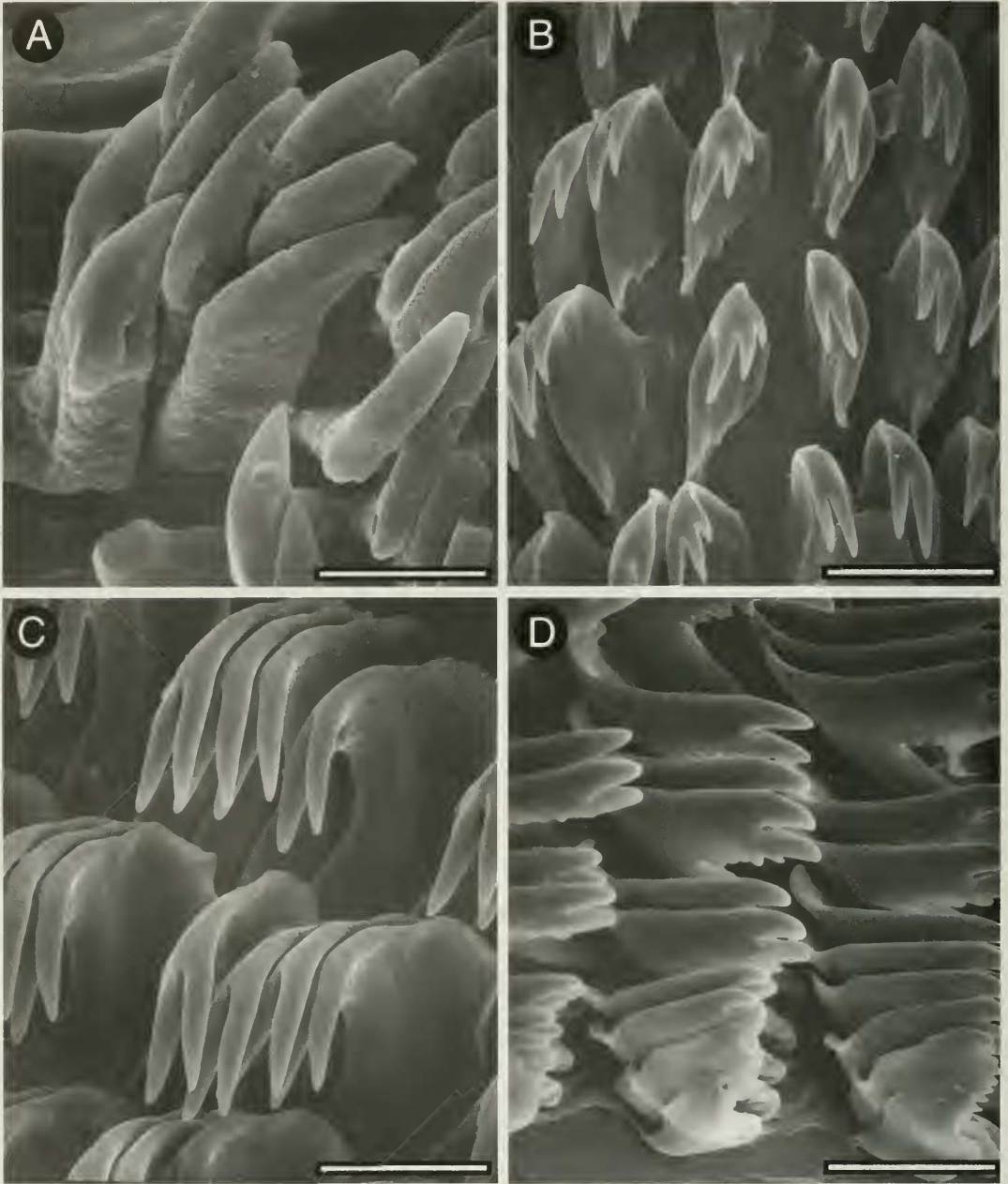


FIGURE 5. *Hypselodoris dollfusi* (Pruvot-Fol, 1933) Scanning electron micrographs. A. Jaw rodlets, scale = 10 μ m. B. Inner lateral teeth, scale = 38 μ m. C. Lateral teeth from central portion of half-row, scale = 30 μ m. D. Outer lateral teeth, scale = 30 μ m.

which enters the female gland mass. The prostate narrows into the moderately short ejaculatory portion, which terminates in a slightly enlarged penis. The vaginal duct is narrow and long. The minute, short, pyriform receptaculum seminis has a short duct which attaches to the vaginal duct at the base of the spherical bursa copulatrix. The uterine duct is long and narrow forming a loop before entering the

female gland mass below the entrance of the oviduct into the mass. It branches from the vagina just below the common insertion of the bursa and receptaculum seminis. The female gland mass is large and completely developed. A large, lobate vestibular gland is present.

DISCUSSION. — *Glossodoris dollfusi* was originally described from a single 30 mm preserved specimen collected from the Gulf of Suez, Egypt. This species has not been documented in other publications since its original description and its status has remained in question. Pruvot-Fol (1951) suggested that the color description of *G. dollfusi* was based on a preserved specimen. This statement led Rudman (1973:196–197) to suggest that the animal was a species of *Chromodoris* similar to *C. inornata* Pease, 1871. Later, Rudman (1983:169) noted the discrepancy between Pruvot-Fol's original description and subsequent comments regarding the coloration being from a living rather than preserved specimen. On the basis that the coloration was from a living specimen, Rudman concluded that the *G. dollfusi* was most likely a chromodorid, but that it was doubtful that it could be identified with any degree of certainty. The original description contains two color plates of the living animal and several figures of the radular teeth. The color plate clearly shows a whitish animal with red to violet rings on the notum and a yellowish marginal band. The radular teeth are described and depicted as being bifid, which is characteristic of members of the genus *Hypselodoris*. There are some minor differences in the external color pattern between Pruvot-Fol's original description and the present specimens. For example the marking on the notum are described by Pruvot-Fol as spots rather than circles and there are also some minor differences in the coloration of the rhinophores as to the distribution of reddish pigment. Nevertheless, the description of the radular teeth, with inner edentulate teeth and outer denticulate ones closely matches the form of the radular teeth in the present material. The partially dissected holotype was re-examined. The buccal mass had been removed for preparation of the radula. No pigment remains. The external anatomy and arrangement of the mantle glands are entirely consistent with the specimens examined here from the Gulf of Oman. As no other species of *Hypselodoris* has a similar color pattern, there is little doubt that the present specimens are conspecific with Pruvot-Fol's species. Although, Pruvot-Fol's animal was from the Gulf of Suez and the present material is known from the Persian Gulf, there is sufficient geographical overlap in the biota as to make this a likelihood.

Hypselodoris dollfusi differs markedly from any described species of *Hypselodoris* (Gosliner and Johnson, 1999). It is the only member of the genus known to possess circular rings on the notum. The general whitish body color is similar to most Indo-Pacific members of the genus.

This species appears to be a member of the clade of *Hypselodoris* species that contains *H. fucata* Gosliner and Johnson, 1999; *H. kaname* Baba, 1994, *H. koumacensis* Rudman, 1995 and *H. paulinae* Gosliner and Johnson, 1999. All members of this clade share three important synapomorphies: erect rather than spreading branchial plume, a short jaw element shaft and a receptaculum seminis that inserts at the base of the bursa copulatrix rather than more distally along the vaginal duct. *Hypselodoris dollfusi* shares all of these features with the other members of this clade. In the above-mentioned species the mantle glands are small and arranged uniformly around the mantle margin. In *H. dollfusi* there are small glands that are interrupted in the mid-region of the body, on either side. The body color of *H. dollfusi* most closely resembles that of *H. paulinae*, but differs in having pink rings rather than red blotches. *Hypselodoris dollfusi* also lacks the purple submarginal line on the foot that is present in *H. paulinae*.

The inner lateral radular teeth of *H. dollfusi* closely resemble those of *H. fucata* and *H. paulinae* where a denticle is present on the inner side of the radular tooth, but is absent on the outer side. In *H. kaname* and *H. koumacensis* the outer side of the tooth also bears a denticle. The denticulation of the radular teeth of *H. dollfusi* is most similar to that of *H. fucata*. In this species only the outer 15 teeth possess denticles on the outer face of the teeth whereas in *H. dollfusi* the outer 4–10 teeth are denticulate. The other members of this clade have more denticulate teeth with the most extreme case being *H. kaname*, where all radular teeth are denticulate.

The reproductive system of *H. dollfusi* is similar to that of other members of the clade described above. All members of this clade have a receptaculum seminis that inserts at the base of the bursa copulatrix rather than more distally along the vaginal duct. In *H. dollfusi*, the vagina is narrower than in the other members of the clade. Also, the ejaculatory portion of the vas deferens appears shorter in *H. dollfusi* than in other members of the clade.

***Hypselodoris babai* sp. nov.**

Figs. 1C, 6A–E, 7A–E

TYPE MATERIAL. — HOLOTYPE: CASIZ 115758, one specimen, 55 m depth, Seragaki, Okinawa, 26 April 1996, Bob Bolland. PARATYPES: CASIZ 115804, one specimen, 44 m depth, Seragaki, Okinawa, 4 April 1997, Bob Bolland. CASIZ 127924, one specimen, 58 m depth, Seragaki, Okinawa, 16 May 2000, Bob Bolland.

ETYMOLOGY. — *Hypselodoris babai* is named for our friend and colleague Dr. Kikutaro Baba. He has been an inspiration to us throughout our careers in opisthobranch systematics. For more than almost 70 years, Baba has been carefully documenting the remarkable diversity of Japanese opisthobranchs. This is a truly remarkable achievement.

DISTRIBUTION. — Thus far, this species is known only from the type locality, Seragaki, Okinawa.

EXTERNAL MORPHOLOGY. — The living animals (Fig. 1C) reach at least 25 mm in length. The body is opaque white with a rich red-brown central region. There are a series of long irregular oval white spots distributed over the mantle. The oval marking, beginning between the rhinophores varies in length and shape, and may extend mid-dorsally half the length of the mantle to the gill. A wide white band, similar to that on the mantle, edges the foot. A series of white ovals occur medially along the posterior end of the foot. The gill and rhinophores are bright red. The rhinophores are very long, bearing 25 lamellae. The branchial plume is also very tall and unipinnate, with 5 gill leaflets.

MANTLE GLANDS. — (Fig. 6A, B) The mantle glands are limited to the anterolateral and posterior ends of the dorsum. There are 3–4 large posterior glands and 4–6 smaller, anterolateral glands. The holotype has three small glands positioned just anterior to the gill plume, on the left side of the body.

DIGESTIVE SYSTEM AND BUCCAL ARMATURE. — The buccal mass (Fig. 6C) is very small relative to the size of the body. The oral tube is extremely narrow and elongate. The cerebral nerve ring is situated well behind the posterior end of the buccal mass. The muscular portion of the buccal mass is approximately equal in length to the oral tube (Fig. 6D). At its posterior end there are a pair of short salivary glands and more ventrally situated are the paired buccal ganglia. At the anterior end of the muscular portion of the buccal mass is a chitinous labial cuticle, which bears numerous jaw rodlets. The rodlets (Fig. 7A) have an elongate base with unifid, bifid and trifid cusps. The radular formula of the paratype is $57 \times 43\text{--}45.0.43\text{--}45$. There is no trace of a rachidian row of teeth. The innermost lateral teeth (Fig. 7B) have a simple, bifid cusp with one or two denticles on the inner side of the primary cusp. There are no denticles on the outer side of the cusps. The subsequent inner lateral teeth lack denticles on either side of the cusp. At approximately the fifteenth row of teeth, a single denticle is present below the primary cusps. More external midlateral teeth have 4–5 denticles below the cusps (Fig. 7C). The outermost laterals (Fig. 7D) bear 7–10 rounded denticles below the primary cusps.

REPRODUCTIVE SYSTEM. — (Fig. 6E) The arrangement of the organs is triaulic. The ampulla is elongate and swollen. It divides into the short, thick, slightly convoluted prostate and short oviduct, which enters the female gland mass. The prostate narrows into the moderately short ejaculatory portion, which terminates in a much-enlarged penis. The vaginal duct is relatively straight and short. The small, short, pyriform receptaculum seminis has a short duct that attaches to the vaginal duct near the middle of its length. The uterine duct is long and narrow, forming several convoluted loops before en-

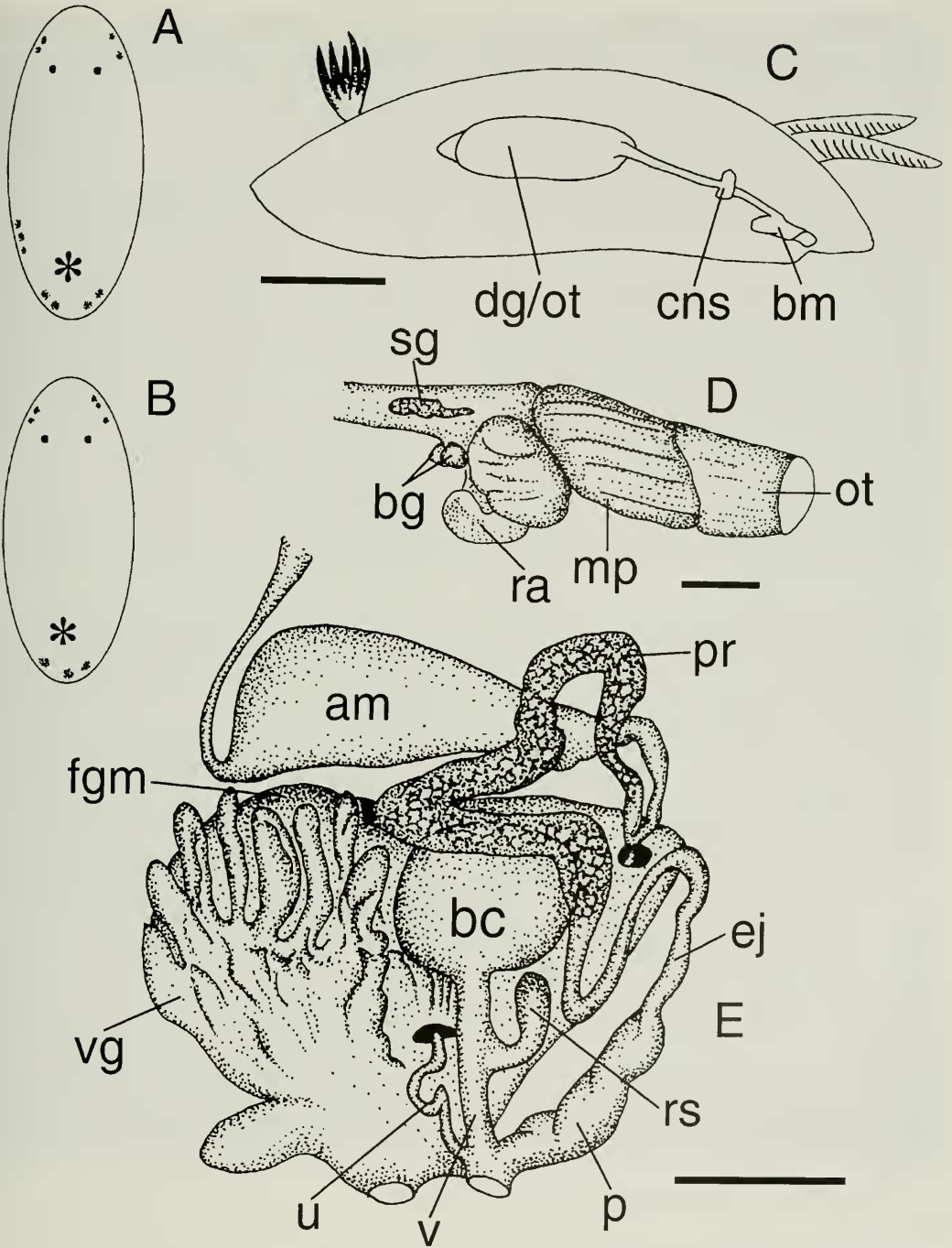


FIGURE 6. *Hypselodoris babai* sp. nov. A. Subcutaneous glandular network (CASIZ 115758). B. Subcutaneous glandular network (CASIZ 115804). C. Digestive system, bm = buccal mass; cns = central nervous system; dg/ot = digestive gland/ovotestis, scale = 5.0 mm. D. Buccal mass, bg = buccal ganglia; mp = muscular portion of buccal mass; ot = oral tube; ra = radular sac; sg = salivary gland, scale = 1.0 mm. E. Reproductive system, am = ampulla, bc = bursa copulatrix, ej = ejaculatory duct, fgm = female gland mass, p = penis, pr = prostate, rs = receptaculum seminis, vg = vestibular gland, scale = 1.0 mm.

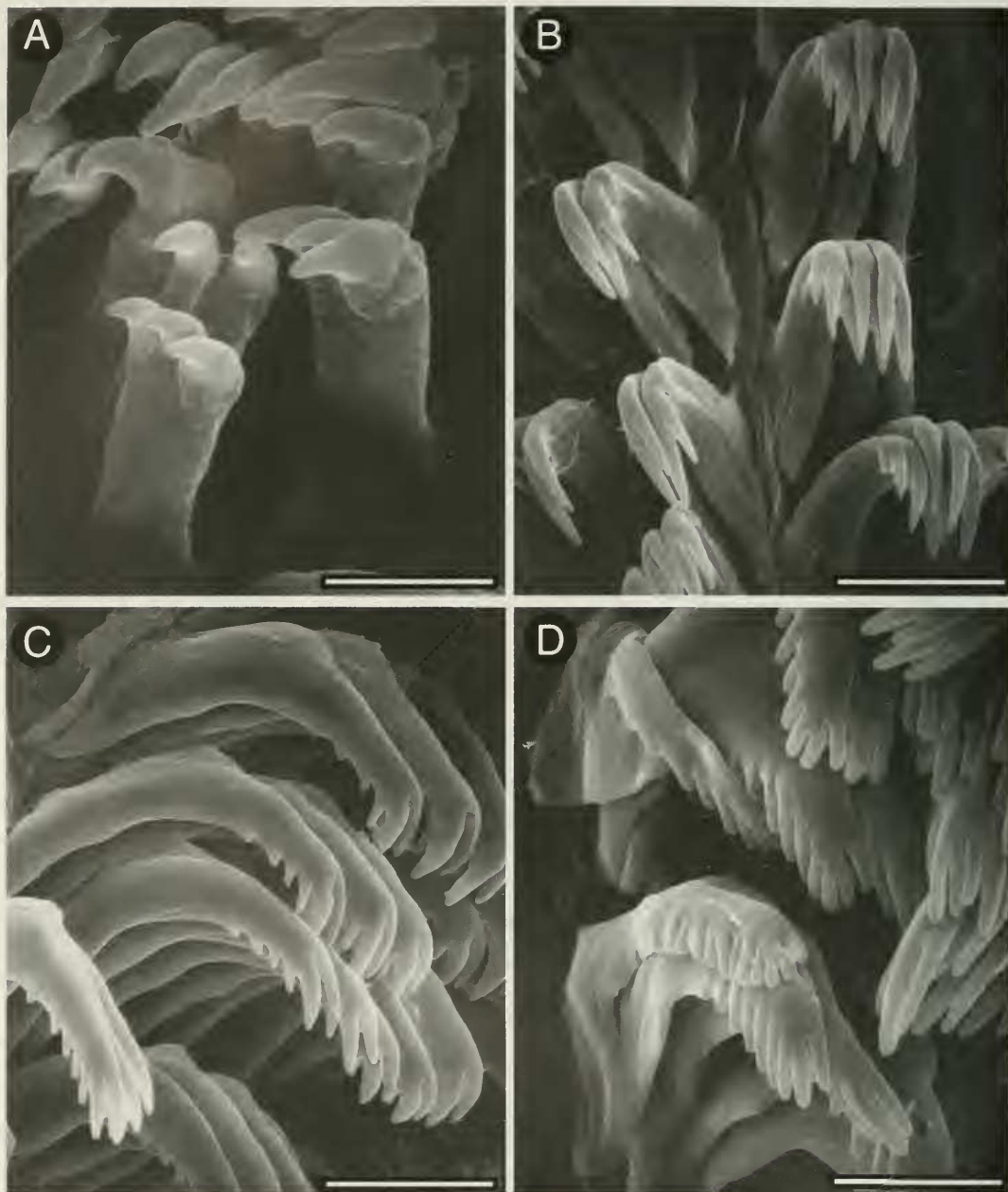


FIGURE 7. *Hypselodoris babai* sp. nov. Scanning electron micrographs. A. Jaw rodlets, scale = 5 μm . B. Inner lateral teeth, scale = 17.6 μm . C. Lateral teeth from central portion of half-row, scale = 13.6 μm . D. Outer lateral teeth, scale = 12 μm .

tering the female gland mass below the entrance of the oviduct into the mass. The uterine duct branches from the vagina near the base. The female gland mass is large and completely developed. A large, lobate vestibular gland is present.

DISCUSSION. — This species is most similar in its external coloration to *Hypselodoris bullocki* (Collingwood, 1881). Both species have a reddish or pink to purple body color and red to orange gills

and rhinophores. *Hypselodoris babai* differs from *H. bullocki* in having a broader white marginal band and numerous white spots and blotches over the dorsal surface of the mantle and foot. While details of the anatomy of *H. bullocki* remain largely undescribed, the present species differs in several significant regards. *Hypselodoris bullocki* has a highly elevated gill sheath and lacks any mantle glands around the margin of the mantle (present study). *Hypselodoris babai* has a slightly elevated gill sheath and has three to four large posterior glands and smaller lateral and anterolateral glands. Details of the internal anatomy of *H. bullocki* need to be described to more fully compare these two species. The present species also bears some resemblance to *Durvilledoris pusilla* (Bergh, 1874). The latter species differs externally in having a yellow rather than white marginal band and also has fewer white spots than in *H. babai*.

Hypselodoris babai is unusual among described species of *Hypselodoris* in that the central nervous system and the buccal bulb are much smaller. It is unclear whether this is also a characteristic of *H. bullocki* and related taxa and certainly warrants further study.

ACKNOWLEDGMENTS

This work was supported by a grant from the National Science Foundation Partnerships for Enhancing Expertise in Taxonomy program (Phylogenetic systematics of dorid nudibranchs) award 9978155, made to the senior author. We thank Robert Bolland, Carol and Neil Buchanan, Carole Harris and Leon Betts for collecting the material studied here. Their enthusiasm has greatly facilitated discovery of many new opisthobranch species in the Indo-Pacific. Virginie Héros of the Muséum d'Histoire Naturelle, Paris, kindly provided the holotype of *Glossodoris dollfusi*. We also thank Ángel Valdés for providing valuable comments for improving the manuscript and for preparing the final plates and Bill Rudman for providing the critical identification of *Hypselodoris dollfusi*.

LITERATURE CITED

- BABA, K. 1994. Descriptions of four new, rare, or unrecorded species of *Hypselodoris* (Nudibranchia: Chromodorididae) from Japan. *Venus* 53(3):175–187.
- . 1995. Anatomical and taxonomical review of four blue patterned species of *Hypselodoris* (Nudibranchia: Chromodorididae) from Japan. *Venus* 54 (1):1–15.
- GOSLINER, T. M. 1994. New species of *Chromodoris* and *Noumea* (Nudibranchia: Chromodorididae) from the western Indian Ocean and southern Africa. *Proceedings of the California Academy of Sciences* 48(12):239–252.
- GOSLINER, T. M. AND D. W. BEHRENS. 1998. Five new species of *Chromodoris* (Mollusca: Nudibranchia: Chromodorididae) from the tropical Indo-Pacific Ocean. *Proceedings of the California Academy of Sciences* 50(5):139–165.
- GOSLINER, T. M. AND R. F. JOHNSON. 1999. Phylogeny of *Hypselodoris* (Nudibranchia: Chromodorididae) with a review of the monophyletic clade of Indo-Pacific species, including descriptions of twelve new species. *Zoological Journal of the Linnean Society* 125:1–114.
- HAMATANI, I. 1995. Two species of Chromodorididae (Nudibranchia), one newly recorded and one newly established, from middle Japan. *Venus* 54(2):101–107.
- JOHNSON, R. F. AND T. M. GOSLINER. 1998. The genus *Pectenodoris* (Nudibranchia: Chromodorididae) from the Indo-Pacific, with the description of a new species. *Proceedings of the California Academy of Sciences* 50(12):295–306.
- PRUVOT-FOL, A. 1933. Mission Robert Dollfus en Egypte. Opisthobranchiata. *Memoires de l'Institute d'Egypte* 21:89–159.
- . 1951. Revision du genre *Glossodoris* Ehrenberg. *Journal de Conchyliologie* 91:76–164.
- RUDMAN, W. B. 1973. Chromodorid opisthobranch Mollusca from the Indo-West Pacific. *Zoological Journal of the Linnean Society* 52(3):175–199.

- . 1982. The Chromodorididae (Opisthobranchia: Mollusca) of the Indo-West Pacific: *Chromodoris quadricolor*, *C. lineolata* and *Hypselodoris nigrolineata* colour groups. Zoological Journal of the Linnean Society 76(3):183–241.
- . 1983. The Chromodorididae (Opisthobranchia: Mollusca) of the Indo-West Pacific: *Chromodoris splendida*, *C. aspersa* and *Hypselodoris placida* colour groups. Zoological Journal of the Linnean Society 78(2):105–173.
- . 1984. The Chromodorididae (Opisthobranchia: Mollusca) of the Indo-West Pacific: a review of the genera. Zoological Journal of the Linnean Society 81(2 and 3):115–273.
- . 1986. The Chromodorididae (Opisthobranchia: Mollusca) of the Indo-West Pacific: *Noumea purpurea* and *Chromodoris decora* colour groups. Zoological Journal of the Linnean Society. 86:309–353.
- . 1987. The Chromodorididae (Opisthobranchia, Mollusca) of the Indo-West Pacific: *Chromodoris epicuria*, *C. aureopurpurea*, *C. annulata*, *C. coi* and *Risbecia tryoni* colour groups. Zoological Journal of the Linnean Society 90(4):305–407.
- . 1995. The Chromodorididae (Opisthobranchia: Mollusca) of the Indo-West Pacific: further species from New Caledonia and the *Noumea romeri* group. Molluscan Research 16:1–43.
- SCHRÖDL, M 1999. *Glossodoris charlottae*, a new chromodorid nudibranch from the Red Sea (Gastropoda, Opisthobranchia). Vita Marina 46(3–4):89–94.
- VALDÉS, Á., E. MOLLO, AND J. ORTEA, 1999. Two new species of *Chromodoris* (Mollusca, Nudibranchia, Chromodorididae) from southern India, with a redescription of *Chromodoris trimarginata* (Winkworth, 1946). Proceedings of the California Academy of Sciences 51(3):461–472.